

Fig. 1a)

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1      gaggaggccc gagaggagtc ggtgggcagcg gcgggcggcgg gaccgggcagc agcagcagca
61     gcagcagcag caaccactag cctcctgccc cgcggcgcttg cgacgagccc caccgagccgc
121    tcaccccgcc gttctcagcg ctgcccgacc ccgctggcgc gcctcccgcc gcagtcccg
181    cagcgcctca gttgtcctcc gactcgccct cggccttcgc gcagcgcagc acagccgcac
241    gcaccgcagc acagcacagc acagcccagg catagcttcg gcacagcccc ggctccggct
301    cctgcggcag ctctcttggc acgtccctgc gccgacattc tggagggttg atgctcttgt
361    ccaaaatcaa ctcgcttgcc cactgcgcg ccgcgccttg caacgacctg caccgccaca
421    agctggcgcc cggcaaggag aaggagcccc tggagtcgca gtaccagggt ggcccgtac
481    tgggcagcgg cggcttcggc tcggctctact caggcatccg cgtctccgac aacttgccgg
541    tggccatcaa acacgtggag aaggaccgga tttccgactg gggagagctg cctaattggca
601    ctcgagtgcc catggaagtg gtctgtctga agaagggtgag ctcggttttc tccggcgta
661    ttaggctcct ggactgggtc gagaggcccc acagtttcgt cctgatcctg gagaggcccc
721    agccggtgca agatctcttc gacttcatca cggaaagggg agccctgcaa gaggagctgg
781    cccgcagctt cttctggcag gtgctggagg ccgtgcggca ctgccacaac tgcggggtgc
841    tacaccgcga catcaaggac gaaaacatcc ttatcgacct caatcgcggc gagctcaagc
901    tcatcgactt cgggtcgggg gcgctgctca aggacaccgt ctacacggac ttcgatggga
961    cccgagtgtg tagccctcca gagtggatcc gctaccatcg ctaccatggc aggtcggcgg
1021   cagtctggtc cctggggatc ctgctgtatg atatgggtgtg tggagatatt cctttcgagc
1081   atgacgaaga gatcatcagg ggccagggtt tcttcaggca gagggctctc tcagaatgtc
1141   agcatctcat tagatgggtg ttggccctga gaccatcaga taggccaacc ttcgaagaaa
1201   tccagaacca tccatggatg caagatgttc tctgccccca ggaaactgct gagatccacc
1261   tccacagcct gtcgccgggg cccagcaaat agcagccttt ctggcaggtc ctccctctc
1321   ttgtcagatg cccgagggag gggaagcttc tgtctccagc tttccgagta ccagtgcac
1381   gtctcgccaa gcaggacagt gcttgatata ggaacaacat ttacaactca ttccagatcc
1441   caggccccct gaggctgcct cccaacagtg gggaagagtg actctccagg ggtcctaggc
1501   ctcaactcct cccatagata ctctcttctt ctcatagggt tccagcattg ctggactctg
1561   aaatatcccc ggggtggggg gtgggggtgg gcagaaccct gccaatggaa ctctttcttc
1621   atcatgagtt ctgctgaatg ccgcgatggg tcaggtaggg gggaaacagg ttgggatggg
1681   ataggactag cacattttaa gtccctgtca cctcttcgga ctctttctga gtgccttctg
1741   tggggactcc ggctgtgctg ggagaaatac ttgaacttgc ctcttttacc tgctgcttct
1801   ccaaaaatct gcctgggttt tgttccctat ttttctctcc tgtcctccct caccctctcc
1861   ttcatatgaa aggtgccatg gaagaggcta caggggccaaa cgctgagcca cctgcccttt
1921   tttctgcctc ctttagtaaa actccgagtg aactggctct ccttttttgg ttttacttaa
1981   ctgtttcaaa gccaaagacct cacacacaca aaaaaatgca caaaccaagc aatcaacaga
2041   aaagctgtaa atgtgtgtac agttggcatg gtagtatata aaaagattgt agtggatcta
2101   atttttaaga aattttgcct ttaagttatt ttacctgttt ttgtttcttg ttttgaaaga
2161   tgcgcattct aacctggagg tcaatgttat gtatttattt atttatttat ttggttcctc
2221   tcctattcca agcttccata gctgctgccc tagttttctt tctcctttc ctctctgac
2281   ttggggacct tttgggggag ggctgcgacg cttgctctgt ttgtgggtg acgggactca
2341   ggcgggacag tgctgcagct ccctggcttc tgtggggccc ctcacctact taccaggtg
2401   ggtcccggtc ctgtgggtga tgggaggggc cattgctgac tgtgtatata ggataattat
2461   gaaacacagt tctggatggt gtgccttcca gatcctctct ggggctgtgt tttgagcagc
2521   aggtagcctg ctggttttat ctgagtgaat tactgtacag ggaataaaaa gagatcttat
2581   ttttttttta tacttgcggt tgggaataaaa accctttggc ttt

```

Fig. 1b)

```
1      mllskinsla hlraapcndl hatklapgke keplesqyqv gpllgsggfg svysgirvsd
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121    erpepvqdlf dfitergalq eelarsffwq vleavrhchn cgvlhrdikd enilidlnrg
181    elklidfgsg allkdtvytd fdgtrvyspp ewiryhryhg rsaavwslgi llydmvcgdi
241    pfehdeeir  gqvffrqrvs secqhlirwc lalrpsdrpt feeiqnhpwm qdvllpqeta
301    eihlhslspg  psk
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Fig. 1c)

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1      gggatgctct tgtccaagat caactccctg gcccacctgc gcgcagcccc ttgcaacgac
61     ctgcacgcca acaagctggc gccgggcaaa gagaaggagc ccctggagtc gcagtaccag
121    gtgggccccg tgttgggcag cggtggtctt ggctcgggtc actcggggcat ccgcgtcgcc
181    gacaacttgc cggtgggccat caagcacgtg gagaaggacc ggatttccga ctggggggaa
241    ctgcccacg gcacccgagt gcccattgaa gtggtcctgc tgaagaaggt gagctcgggc
301    ttctcgggcg tcattagact tctggactgg ttcgagaggc ccgatatgtt cgtgctgac
361    ctggagaggc ccgaaccctg gcaagacctc ttcgacttca tcaccgagcg aggagccctc
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481    aactgcgggg ttctccaccg cgacatcaag gacgagaaca tcttaatcga cctgaaccgc
541    ggcgaactca aactcatcga cttcgggtcg ggggcgctgc tcaaggacac agtctacacg
601    gactttgacg gaacccgagt gtacagtcct ccagagtgga ttcgctacca tcgctaccac
661    ggcaggtcgg ctgctgtttg gtccctgggg atcctgctct atgacatggt ctgcggagat
721    attccatttg agcacgacga agagatcgct aaggggccaag tgtacttttag gcaaagggtc
781    tcttcagaat gtcaacatct tattagatgg tgctgtccc tgagaccatc ggaccggccc
841    tcctttgaag aaatccagaa ccatccgtgg atgcaggatg ttctcctgcc ccaggccacc
901    gccgagattc atctgcacag cctgtcacca tcaccagca aatagcagcc attctgtcag
961    accctccagg gaagagagag cttgtctgct ggcctccaac aggaccctgc tctacgatgc
1021   agggacagaa atgacaactc attccaggct ccgggggtccc tggagcaacc tccctcaagg
1081   agaagagact agttcactcg tcctggaccc cgctttgccc ctcacagact cagtggcgtc
1141   cagtgtggct ggcgtccgca gagtcccggt tgttgggggg ggaggtggga gtgggtcaga
1201   gccctgtcat ggaacttttag tcaccatgga gactgtgggt caccaagatg ggccagggtg
1261   ggggaaaaac atttgggggg tgggattaaa aactagcacc at

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Fig. 1d)

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1      mllskinsla hlraapcndl hanklapgke keplesqyqv gp1lgsggfg svysgirvad
61     nlpvaikhve kdridswgel pngtrvpmev vllkkvssgf sgvirllldwf erpdsfvlil
121    erpepvqdlf dfitergalq eelarsffwq vleavrhchn cgvlhrdikd enilidlnrg
181    elklidfgsg allkdtvytd fdgtrvyspp ewiryhryhg rsaavwslgi llydmvcgdi
241    pfehdeeivk gqvyfrqrvs secqhlirwc lslrpsdrps feeiqnhpwm qdvllpqata
301    eihlhlslsps psk
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```
1   atgctcctgt ccaagatcaa ctccctggcc cacctgcgcg cccgcccctg caacgacctg
61  cacgccacca agctggcgcc gggcaaagag aaggagcccc tggagtcgca gtaccaggtg
121 ggcccgtgtg tgggcagcgg tggcttcggc tcggtctact ctggcatccg cgtcgccgac
181 aacttgccgg tggccattaa gcacgtggag aaggaccgga tttccgattg gggagaactg
241 cccaatggca cccgagtgcc catggaagtg gtcctgttga agaaggtgag ctcggaactc
301 tcgggcgtca ttagacttct ggactgggtc gagaggcccc atagtttcgt gctgacacct
361 gagaggcccc aaccggtgca agacctcttc gactttatca ccgaacgagg agccctacag
421 gaggacctgg cccgaggatt cttctggcag gtgctggagg ccgtgcggca ttgccacaac
481 tgcgggggtc tccaccgcga catcaaggac gagaacatct taatcgacct gagccgcggc
541 gaaatcaaac tcatcgactt cgggtcgggg gcgctgctca aggacacagt ctacacggac
601 tttgatggga cccgagtgtg cagtcctcca gagtggattc gctaccatcg ctaccacggc
661 aggtcggcag ctgtctggtc ccttgggatc ctgctctatg acatggtctg cggagatatt
721 ccgtttgagc acgatgaaga gatcatcaag ggccaagtgt tcttcaggca aactgtctct
781 tcagagtgtc agcaccttat taaatgggtg ctgtccctga gaccgtcaga tcggccctcc
841 tttgaagaaa tccggaacca tccgtggatg cagggtgacc tcctgcccc a ggcagcttct
901 gagatccatc tgcacagtct gtcaccggga tccagcaagt ag
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Fig. 1f)

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1      mllskinsla hlrarpcndl hatklapgke keplesqyqv gp1lgsgggf svysgirvad
61     nlpvaikhve kdrisdwgel pngtrvpmev vllkkvssdf sgvirllldwf erpdsfvlil
121    erpepvqdlf dfitergalq edlargffwq vleavrhchn cgvlhrdikd enilidlsrg
181    eiklidfgsg allkdtvytd fdgtrvyspp ewiryhryhg rsaavwslgi llydmvcgdi
241    pfehdeeiik gqvffrqtv secqhlikwc lslrpsdrps feeirnhpwm qgdllpqaas
301    eihlhlslspg ssk
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Fig. 2a)

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1      cccacgcgtc cgcagagtgc cagcagctga tccggtggtg cctgtccctg cggccctcag
61     agcggccgtc gctggatcag attgcggccc atccctggat gctgggggct gacgggggcg
121    ccccgagagag ctgtgacctg cggctgtgca ccctcgaccc tgatgacgtg gccagcacca
181    cgtccagcag cgagagcttg tgaggagctg cacctgactg ggagctaggg gaccacctgc
241    cttggccaga cctgggacgc ccccgacccc tgactttttc ctgctggtggc cgtctcctcc
301    tgcggaagca gtgacctctg acccctggtg accttcgctt tgagtgcctt ttgaacgctg
361    gtcccgcggg acttggtttt ctcaagctct gtctgtccaa agacgctccg gtcgaggtcc
421    cgccctgccct ggggtggatac ttgaacccca gacgcccctc tgtgctgctg tgtccggagg
481    cggccttccc atctgcctgc ccaccggag ctctttccgc cggcgagggg tcccaagccc
541    acctcccgcc ctgagtcctg cgggtgtgct ctgggcacgt cctgcacaca caatgcaagt
601    cctggcctcc gcgcccgcgc gccacgcga gccgtaccgc ccgccaactc tgttatttat
661    ggtgtgacct cctggagggtg cctcggccc accggggcta tttattgttt aatttatttg
721    ttgaggttat ttcctctgag cagtctgcct ctcccaagcc ccaggggaca gtggggaggc
781    aggggagggg gtggctgtgg tccaggacc ccaggccctg attcctgtgc ctggcgctg
841    tcctggcccc gcctgtcaga agatgaacat gtatagtggc taacttaagg ggagtgggtg
901    accctgacac ttccaggcac tgtgccagg gtttgggttt taaattattg actttgtaca
961    gtctgcttgt gggctctgaa agctgggggtg gggccagagc ctgagcgttt aatttattca
1021   gtacctgtgt ttgtgtgaat gcggtgtgtg caggcatcgc agatgggggt tctttcagtt
1081   caaaagtgag atgtctggag atcatatttt tttatacagg tatttcaatt aaaatgtttt
1141   tgtacataaa aaaaaaaaaa aaaaaaaaaa aaaaaa
```

Fig. 2 b)

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1      cgctcggcca gctgccgtct acgggcttcc gcgcggccac cgggcaactg cgccgcgcgg
61     ctgccccact gagcgctcgg cctcggggcc gtgggatccg ccgcgctgtc tgcggtcagg
121    aagaccgccc tcccgcgctc gtgccggacg ggtcagaggc ggcgcgcac  gcgaggccac
181    ccgcgatgct gctgtccaag ttcggtccc  tggcgcacct ctgcgggcct ggcggcgtgg
241    accacctccc agtgaagatc ctacagccag ccaaggcgga caaggagagc ttcgagaagg
301    tgtaccaggt gggcgccgtg ctcggcagcg gcggcttcgg cacggtctac gcgggcagcc
361    gcatcgccga cggactcccg gtggctgtga agcacgtggt gaaggagcgg gtgaccgagt
421    ggggagctct cggcggaatg gccgtgcccc tggagggtgt gctgctgcgc aagggtggcg
481    cggcgggcgg cgcgcgcggc gtcacccgcc tgctggactg gttcgagcgg cccgacggct
541    tcctgctggt gctggagcga cccgagccgg cacaggacct cttcgacttc atcactgaac
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661    ggcaactgcca caattgtggg atcgtgcacc gcgacatcaa ggacgagaac ctgctggtgg
721    acttgcgctc gggcgagctg aagctcatcg acttcggctc gggcgcggtg ctcaaggaca
781    cggctctaac tgactttgat ggcacccgtg tgtacagccc cccagagtgg atccggtatc
841    atcgatatca cgggcggtct gccactgtgt ggtctctggg tgtactgctc tacgacatgg
901    tgtgtgggga cattcccttt gagcaggatg aggagatctt gcgcggcagg ctctttttcc
961    ggaggagggt ctccccagag tgccagcagc ttattgagtg gtgtctctcc ctgcggccct
1021   cagagaggcc ctcgctggac caaattgctg cccatccctg gatgctgggg acagagggca
1081   gcggtccaga gaactgtgac cttcggctct gtgccctgga tactgatgac ggagccagta
1141   ccacttccag cagtgaagagc ttgtgaggag gaggaggggc ctggactcca cactgggggc
1201   ctgggctcag cctagccagc cctctcccag aatgaacatt ttctgcctgg gatgtctcct
1261   gcaaaaagcag tgacctctga cccctggtga cctttgctct cggcacccgg cctgtttcct
1321   ttgcttttag tgcttttttg aacgctgctc cacagggcct gggttttctt gagctcttct
1381   gtccaaagat ggctgcgggc taagcaaggc cccgcctgcc ctgggtggat acttgaaccc
1441   gagaccctac cctgctgctc catcttgagg cagccttcct gaccaagtgt gtttgacatg
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1981   cagagtctca agcccttaat ttatttttag aactgtgttc tgtgacctg gtgtgagtag
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2101   atacaggtat ttcaattaaa tgttttggta tat

```



```
1      mllskfgsla hlcgpggvdh lpvkilqpak adkesfekvy qvgavlgsgg fgtvyagsri
61     adglpvavkh vvkervtewg slggmavple vlllrkvgaa ggargvirll dwferpdgfl
121    lvlerpepaq dlfdfiterg aldeplarrf faqvlaavrh chncgvvhrd ikdenllvdl
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241    gdipfeqdee ilrgrlffrr rvspecqqli ewclslrpse rpsldqiaah pwmlgtegs
301    pencdlrlca ltdddgastt sssesl
```

Fig. 2 d)

```

1      gcagggcggg tgagagcgcc gtgaaagccg cggaacgccc tgcacctccg cgactctact
61     acggcaagct agtccggacg ggtcgtcgtc cccgcgcgcc accagccctt ggtgaaacga
121    cagggagcgt ccggcttccc cagcaccgcc ctgcgagact caaaacagcc acaccgcaaa
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421    cccgcgtcct tgccggacgg gtcagaggcg gcaccgcacg cgaggccacc cgcgatgctg
481    ctgtccaagt tcggctccct ggcgcacctc tgggggcctg gcggcgtgga ccacctcca
541    gtgaagatcc tacagccagc caaggetgac aaggagagct tcgagaaggt gtaccaggtg
601    ggcgcgcgtg tgggcagcgg cggcttcggc acggtctacg cgggcagccg catcgccgac
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901    gacgagccgc tggcgcgtcg cttcttcgcg caggtgcttg ccgctgtgcg gcactgccac
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1321   tccctggacc aaattgctgc ccacccctgg atgctgggga cagaggggag cgttccagag
1381   aactgtgacc ttcggccttg tgccctggat actgacgacg gagccagtac cacttccagc
1441   agtgagagct ttctgagagg agaagggggc tgggctcggc ctagccagcg ctctcccaga
1501   attgaacact ttctgcctgg gatgtctgct gcaaaagcag tgacctctga cccctggtga
1561   cctttgctct cggcaccggg cctgtttcct ttgctttgag tgcccttttg aacgctgctc
1621   cacagggcct gggttttctt gagctcttct gtccaaagat ggctgagggc taagcaaggt
1681   cctgccctgg gtggatactt gaaccagaga tcccgaacct gctgctccat ctcaggaggc
1741   agccttcttg accaagtgtg tttgacatgg agcgcctgtt ggtgcccacc tccaaccctc
1801   cagtctcctg gtgttcatct gggcatgtct gcacaagcaa tgcaacgctg ggccactgct
1861   gcccgctctg cttcccggca cggcacggct ccgcacgcaa cctaagcgtg ccaccacggt
1921   ctcttattta tgggtgtgat accctggagg gcgccccgcg cctgctgggg ctatttattg
1981   tttaatttat ttgctgaggt tctccaagc aaccaccttc tccaggcccc tggggtgttg
2041   aaagtcaaat gtggctgttg agtccacaga ccccatcctt aattcctgca cctggaggag
2101   tttcccacc cccgtgtttg cgggaggaag catttgtaca gtggctaatt taaggggagt
2161   gggagaccct gtcaccctga gcactctgcg ctggggaggg gtttaaatta ttgacctgt
2221   acagtctgct tgctggctct gaaagctggg gttgggggac agagtctcaa gcccttaatt
2281   tatttttagc gctgtgtttc tgtgacctg gtgtgactaa gcatcagggg tggggttgta
2341   taagttcaaa agtgtgaaat gtctgaagat catatttttt atacagggat ttcaattaaa
2401   tgttttggtg tataatggaa aaaaaaaaaa aaaaaaaaaa aaaaaaa

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1	MLLSKFGSLA	HLCGPGGVDH	LPVKILQPAK	ADKESFEKVY	QVGAVLGSGG	FGTVYAGSRI
61	ADGLPVAVKH	VVKERVTEWG	SLGGVAVPLE	VVLLRKVGAA	GGARGVIRLL	DWFERPDGFL
121	LVLERPEPAQ	DLFDFITERG	ALDEPLARRF	FAQVLA AVRH	CHNCGVVHRD	IKDENLLVDL
181	RSSELKLIDF	GSGAVLKDTV	YTDFDGTRVY	SPPEWIRYHR	YHGRSATVWS	LGVLLEYDMVC
241	GDIPFEQDEE	ILRGRLFFRR	RVSPECQQLI	EWCLSLRPSE	RPSLDQIAAH	PWMLGTEGSV
301	PENCDLRLCA	LDTDDGASTT	SSSESL			

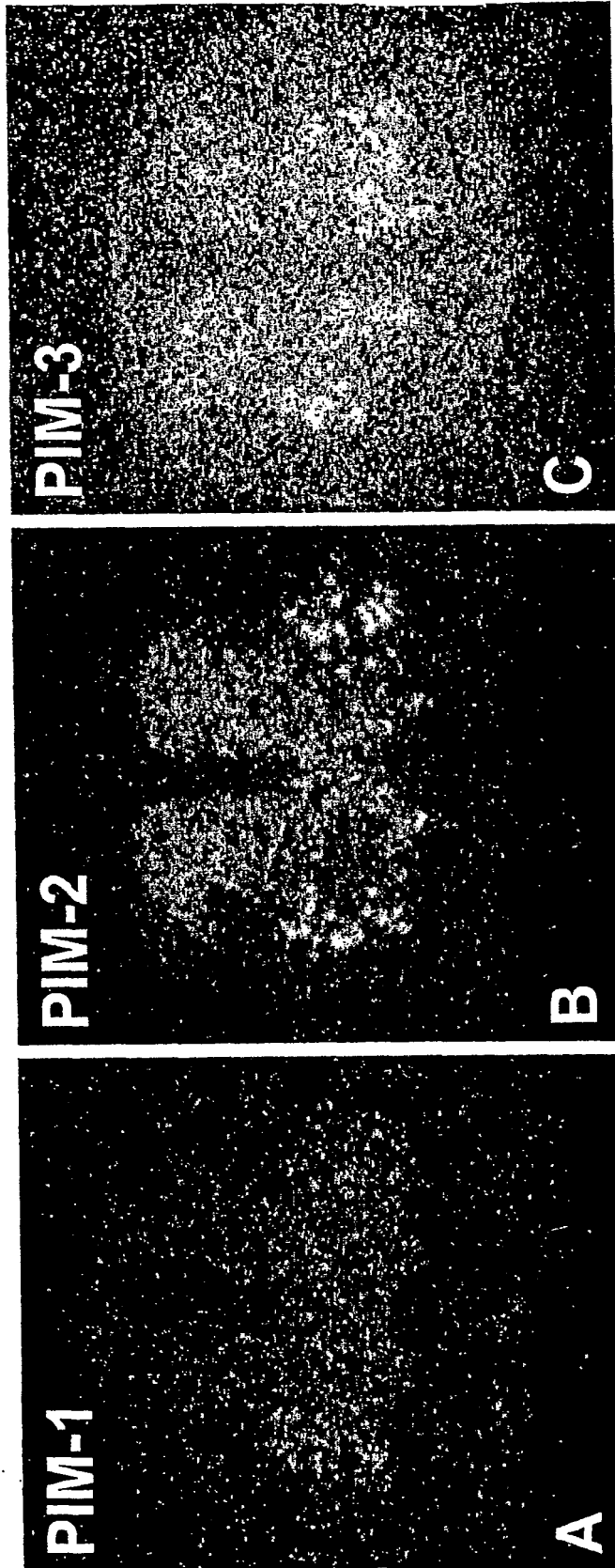


Fig. 3: mRNA Expression of PIM-kinases in the Lumbar Marrow of the Adult Rat

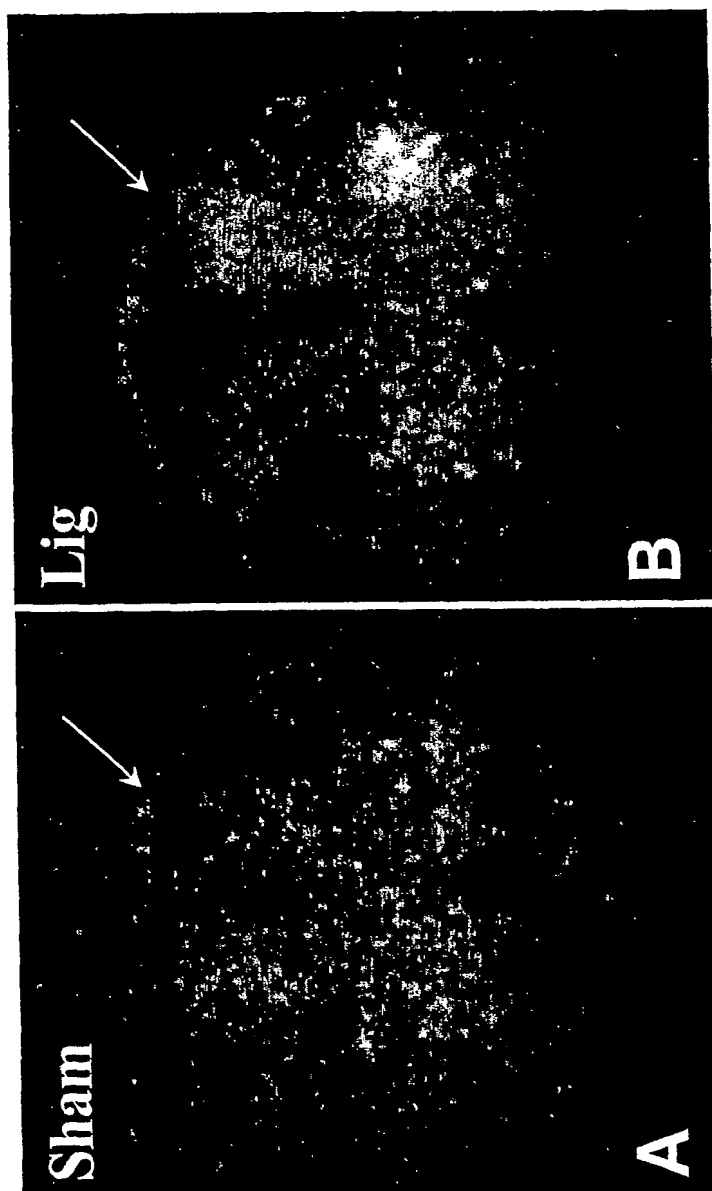
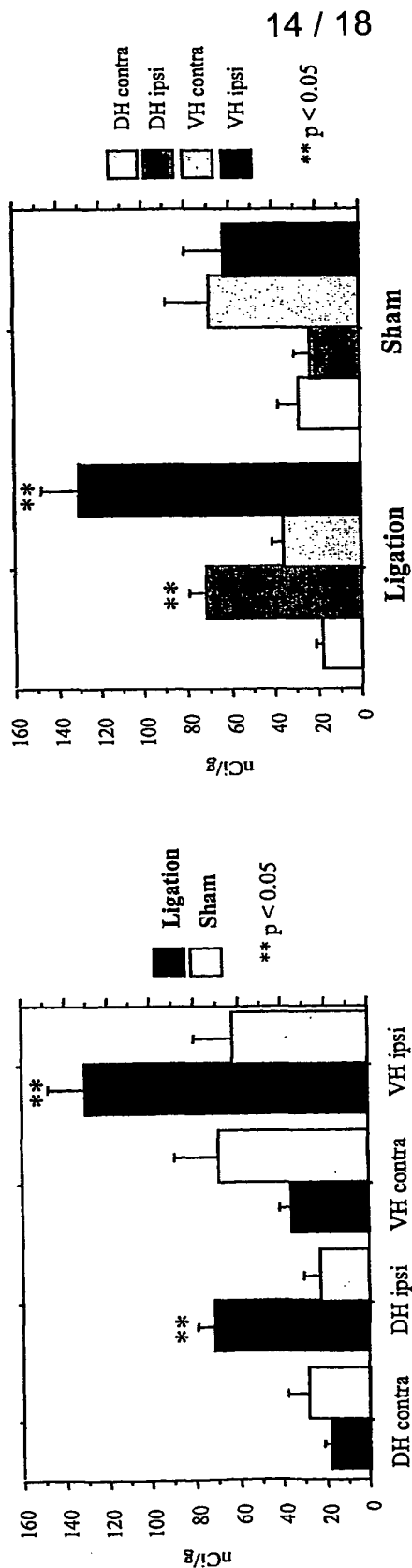


Fig 4: Changes in PIM-1 Gene Expression in the Spinal Cord (L5) after Ischiadicus Ligature (Bennett)

Fig. 5: PIM-1 mRNA Level in the Lumbar Marrow (L5) after Bennett Ligature
 - Quantitative Evaluation of the *in situ* Hybridization Results -



Group	Region	Measurements	Mean Value (nCi/g)	SD	SEM
Ligation	DH contra	17	17,95	14,89	3,61
Ligation	DH ipsi	17	71,61	30,05	7,29
Ligation	VH contra	17	35,19	22,37	5,43
Ligation	VH ipsi	17	129,83	74,83	18,15
Sham	DH contra	9	27,64	29,68	9,89
Sham	DH ipsi	9	21,94	24,52	8,17
Sham	VH contra	9	69,30	57,77	19,26
Sham	VH ipsi	9	62,33	52,31	17,44

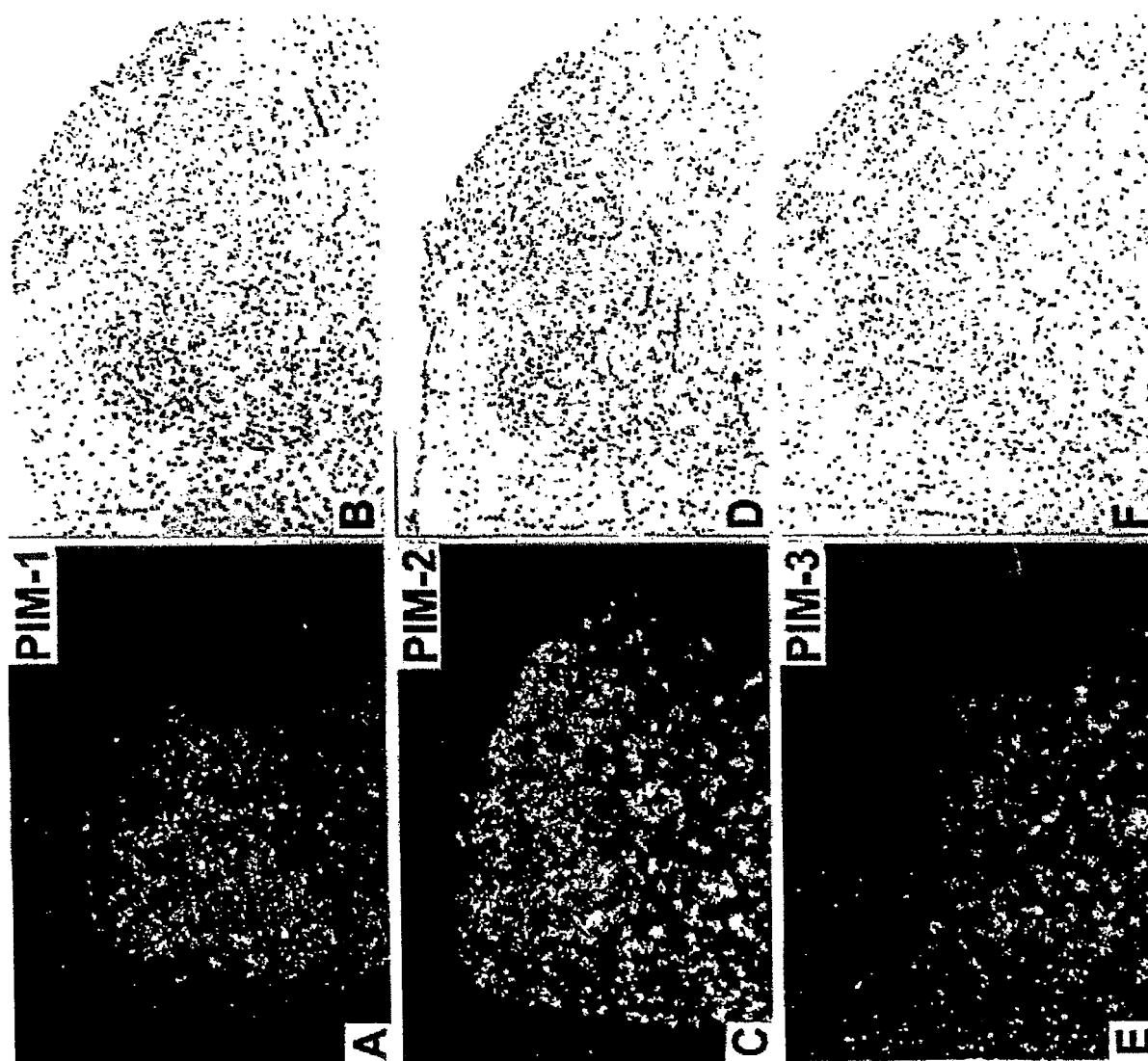


Fig. 6

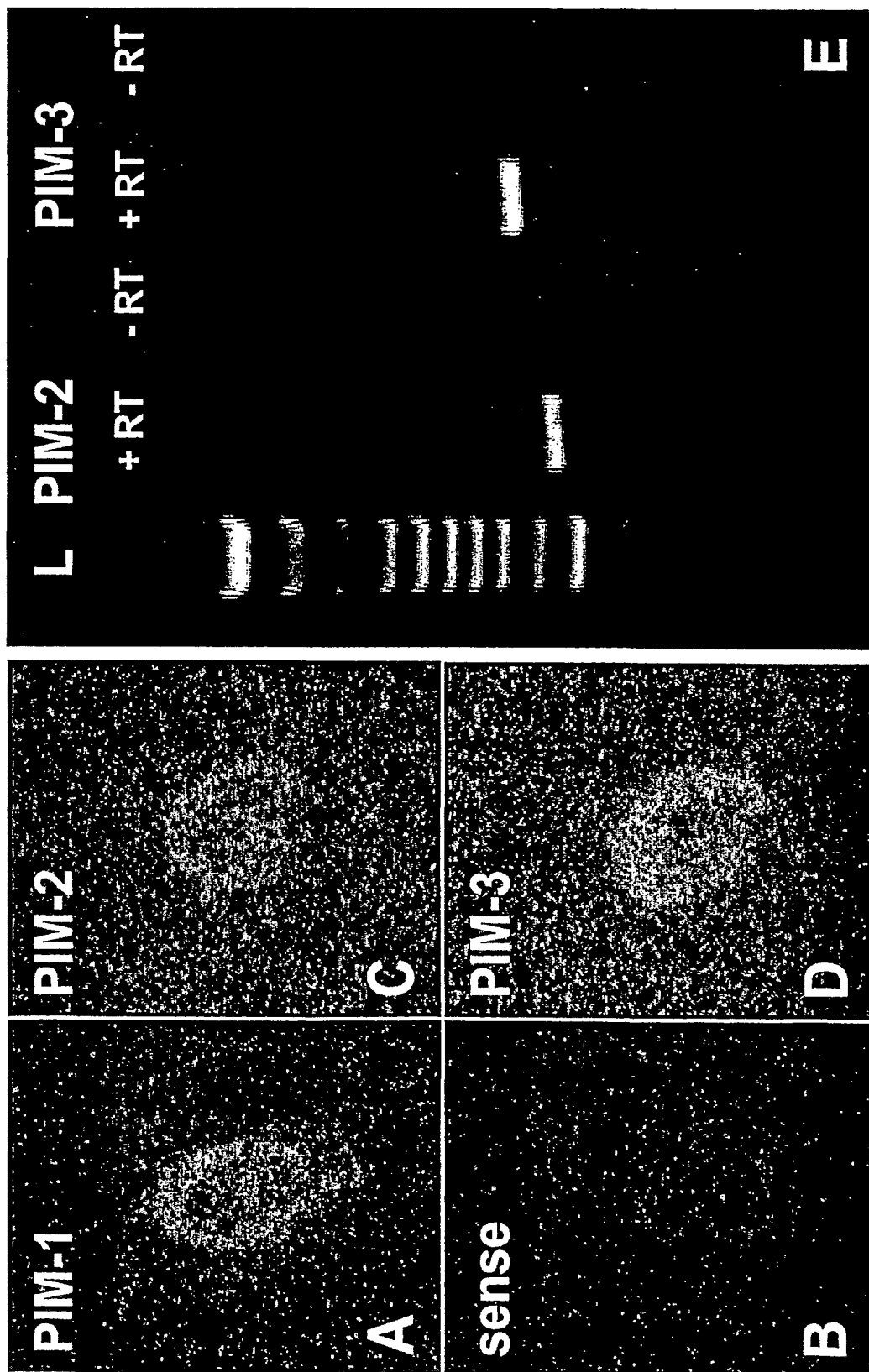


Fig. 7: mRNA Expression of PIM-kinases in the Spinal Ganglion

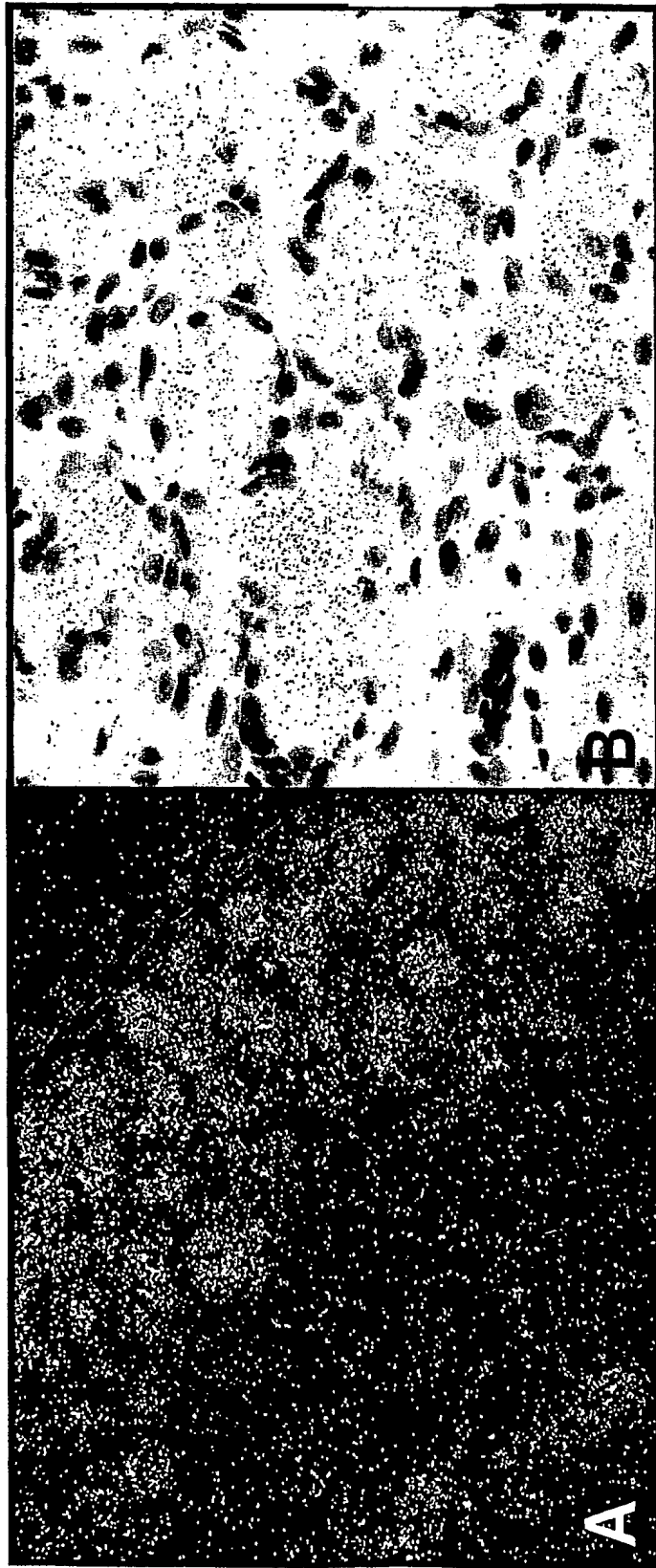


Fig. 8: Localization of PIM-1 Gene Expression in the Spinal Ganglion (L6) of the Rat with *in situ* Hybridization

Fig. 9: Changes in the PIM-1, PIM-2 and PIM-3 mRNA Level in the Spinal Ganglion L6 Following Bilateral CFA Arthritis
- Semi-quantitative RT-PCR Analysis -

